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# DICTIONARY OF BIOCHEMISTRY AND MOLECULAR BIOLOGY

Second Edition

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This dictionary, ten to provide sciences with alogy of biochemi expansion of kn the need for an edition. All of th and reworked, i; formation. This : imately 16,000 e; new, representir over that of the rial consulted fo for addition of n textbooks and re and of over 600 search literature. lished since 1975. are drawn from icles, including Commission on the International Chemistry and Biochemistry. Th made to include the biochemical l lete ones, except

The terminolog ber of characteri tion of entries. O of terms from ot try, by its very n sciences. For this sciences as chen virology, biophy been included in acteristic is the wi both standard an are included to : literature and to some of the nons come standard ( characteristic is : mous expressions. other only by mi onymous nature may not always b cipal synonymous

ing the rate of reassociation of complementary DNA strands derived from the same source (as opposed to hybridization). The technique involves shearing the DNA into small fragments, denaturing these fragments by heating to form single-strand segments, and then allowing the latter to form double-stranded segments by slow cooling (annealing). The extent of reassociation is commonly followed by nuclease digestion, hypochromicity measurements, or hydroxyapatite chromatography. The data are analyzed by means of a cot curve. The DNA segments are usually classified into four categories: unique, slightly repetitive, middle repetitive, and highly repetitive DNA. *See also* cot curve; repetitive DNA.

**reassortant virus** A synthetically produced hybrid virus that contains DNA and protein from different species.

**reassortment** An exchange of genome segments as that which occurs with myxoviruses.

**RECA** RecA protein.

**recapitulation theory** The theory that an organism during its development passes through and recapitulates the stages that have occurred in the development of the species. *Aka* ontogeny recapitulates phylogeny.

**RecA protein** A protein (MW 38,000) that has several enzymatic activities, including a DNA-dependent ATPase activity. It plays a central role in genetic recombination and in SOS repair. *Aka* RecA protease. *See also* SOS repair.

**recBCD enzyme** EXONUCLEASE V.

**receptor** 1. A target site at the molecular level to which a substance becomes bound as a result of a specific interaction. As an example, the site may be on the cell wall, on the cell membrane, or on an intracellular enzyme, and the substance bound may be a virus, an antigen, a hormone, or a drug. The binding interaction might trigger a physiological or a pharmacological response. 2. A site in an organism that responds to specific stimuli such as a chemoreceptor, an osmoreceptor, or a photoreceptor.

**receptor destroying enzyme** NEURAMINIDASE.

**receptor down regulation** *See* down regulation.

**receptor element** *See* controlling element.

**receptor gradient** An arrangement of viruses in a series based on their reaction with, and their destruction of, receptor sites on red blood cells; any virus in the series will react with its own receptor sites and with those specific for viruses that precede it in the gradient, but will not react with receptor sites for viruses that follow it in the gradient.

**receptor internalization** *See* coated pit; receptosome.

**receptor-mediated endocytosis** LIGAND-INDUCED ENDOCYTOSIS.

**receptosome** A vesicular structure in animal cells formed during the down regulation by polypeptide hormones. It consists of a coated pit that has budded off from the cytoplasmic membrane and has entrapped receptor-ligand (hormone) complexes. Receptosomes are also formed in receptor-mediated endocytosis of other ligands such as low-density lipoproteins and lysosomal enzymes; they are probably identical to endosomes. *See also* coated pit.

**recessive** 1. RECESSIVE GENE. 2. The trait produced by a recessive gene in the homozygous state.

**recessive gene** A gene the expression of which is either partially or entirely suppressed when the dominant allelic gene is present. *Aka* recessive allele.

**recessive lethal** An allele that leads to the death of the cell or the organism that is either homozygous or heterozygous for the allele.

**reciprocal activation** The cyclic set of reactions in the intrinsic pathway of blood clotting whereby activated Factor XII converts prekallikrein to kallikrein which, in turn, generates more activated Factor XII.

**reciprocal genes** COMPLEMENTARY GENES.

**reciprocal ion-atmosphere radius** The term  $\kappa$  of the Debye-Hueckel theory that is equal to the reciprocal of the thickness of the ion atmosphere; the reciprocal of the distance from the surface of the central ion to the outer edge of the ion atmosphere.

**reciprocal lattice** The three-dimensional crystal lattice deduced from a two-dimensional x-ray diffraction pattern; used to obtain the dimensions of the unit cell in the real crystal lattice and so called because the positions of the spots in the x-ray diffraction pattern are an inverse measure of the spacings in the real crystal. *Aka* reciprocal space.

**reciprocal plot** *See* single reciprocal plot; double reciprocal plot.

**reciprocal recombination** Recombination that involves a symmetrical exchange of genetic material by crossing over.

**reciprocating shaker** *See* shaker.

**reciprocity** The condition that exists when the product of dose rate, specifically that of radiation, and time of exposure is constant; thus,  $(\text{dose rate})_1 \times \text{time}_1 = (\text{dose rate})_2 \times \text{time}_2$ . *Aka* Bunsen-Roscoe law.

**rec<sup>-</sup> mutant** Recombination-deficient mutant.

**recognition** A specific binding interaction occurring between macromolecules, as that between a tRNA molecule and an aminoacyl-tRNA synthetase, or that between an immunocyte and an antigen.

**recognition site** 1. tRNA SYNTHETASE RECOGNITION SITE.